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WESTERN ENGINEERING

Vol. 2, No. 6 SAN FRANCISCO, JUNE, 1913 $3 per year 25c per copy

LEADING ARTICLES

Hanging Fenders for Docks
By H. J. Brunnier
A new and effective method of fender construction.

Construction of Irrigation Canal Systems from an Operation Standpoint
By P. M. Fogg
Practical suggestions for construction methods giving best operating results.

A Method of Cementing-off Water in Drilling Wells
By Paul M. Paine
Description of a method used in the Midway field that has proved satisfactory.

Elements in Oil Well Drilling
By Dorsey Hager
Factors to be taken into consideration before commencing to drill, and how difficulties may be avoided.

Concrete Slab Flume Construction—Part II
By S. L. Stovall
The conclusion of description, begun in the May issue, of Mt. Whitney L. & P. Co. flume.

Street Improvement at Walla Walla in 1912
By W. R. Rehorn
A description, summary and costs of a year's progress in civic improvements.

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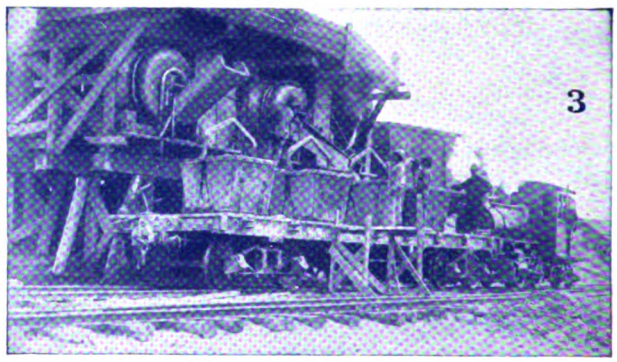

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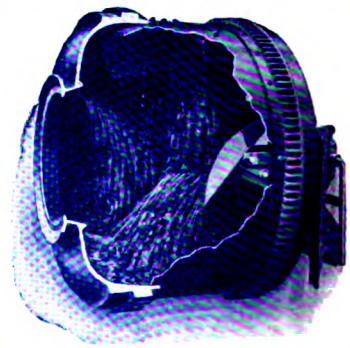

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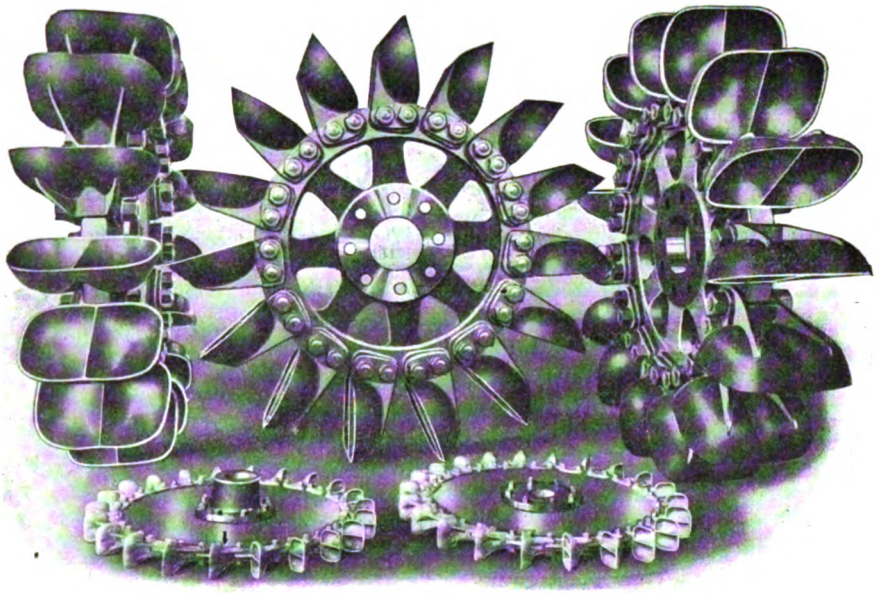

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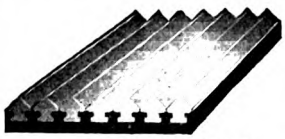

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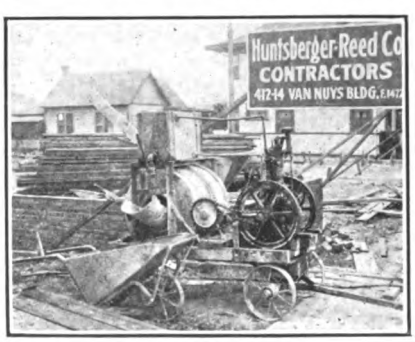

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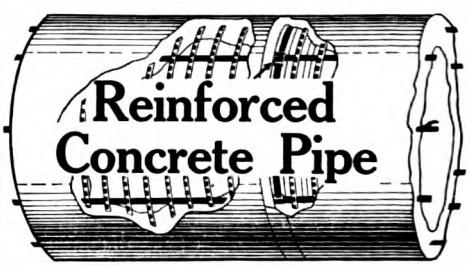

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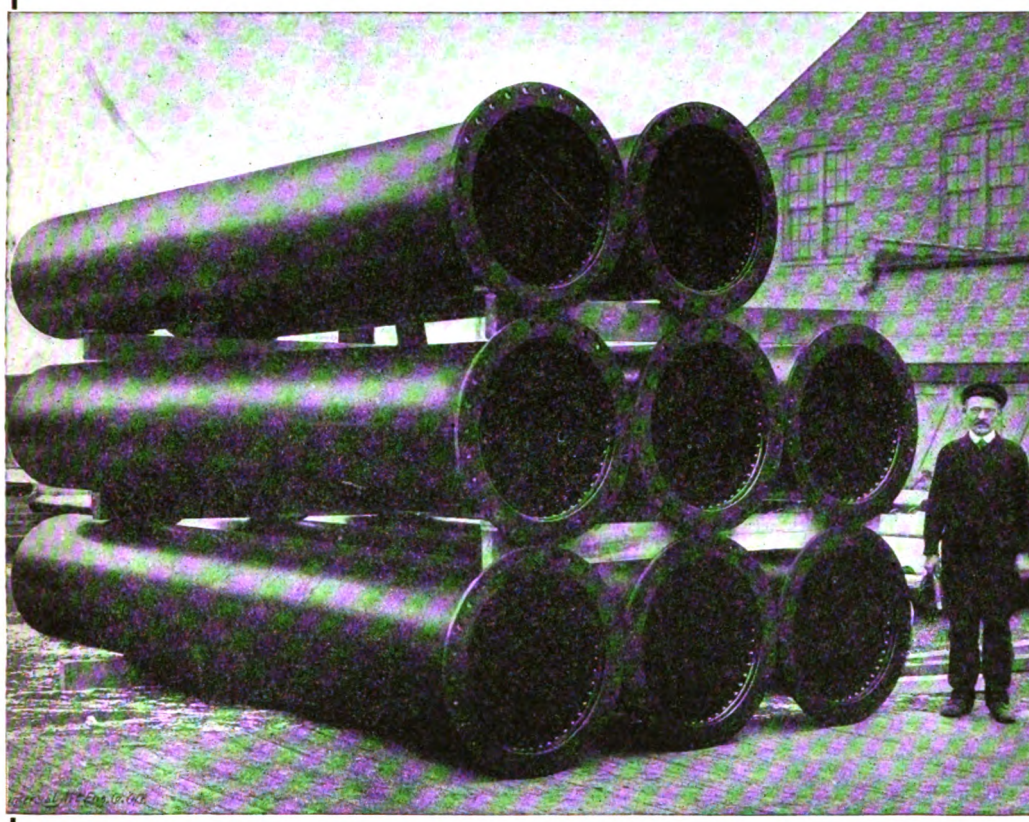

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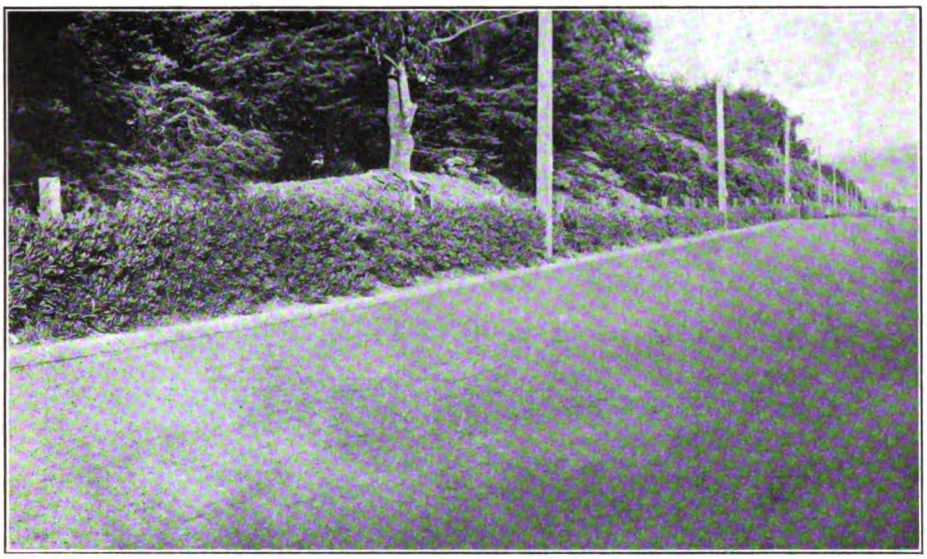

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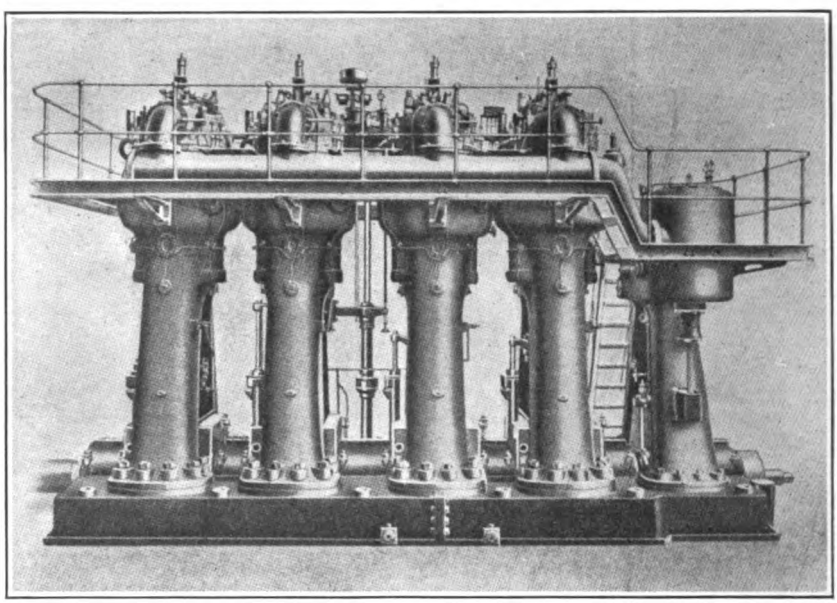

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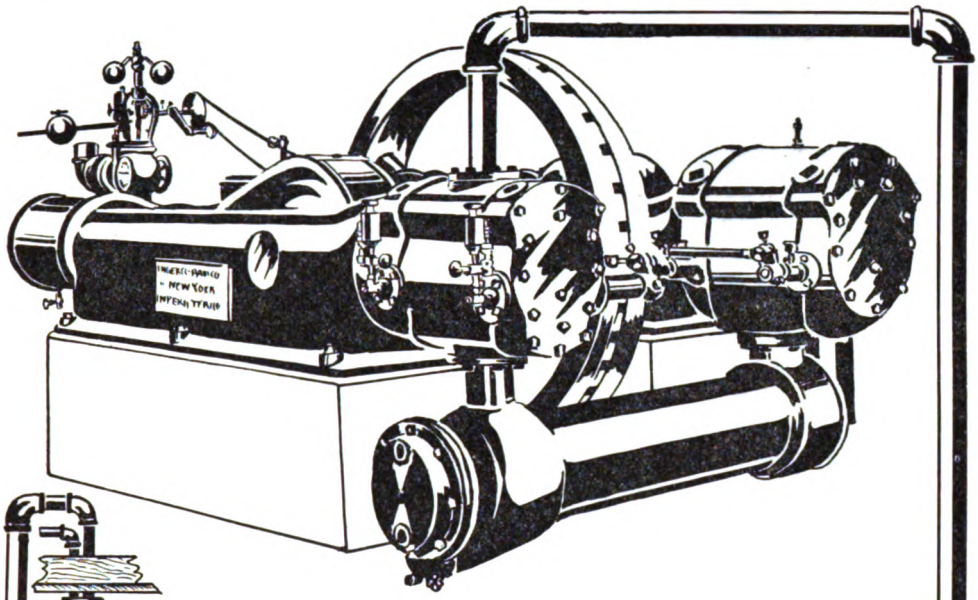

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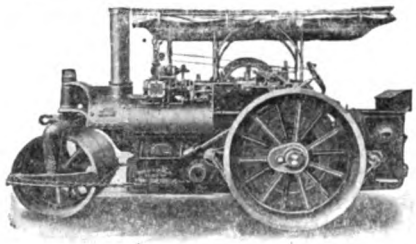

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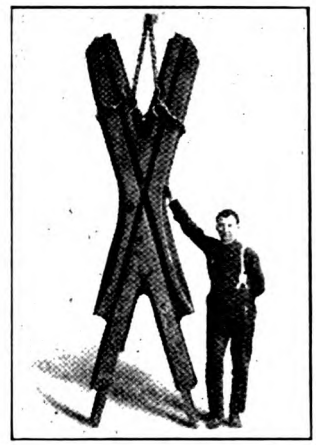

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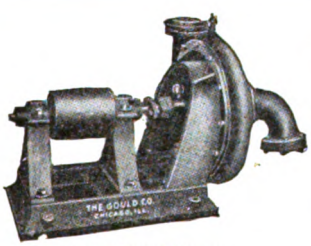

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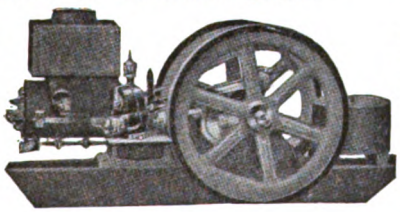

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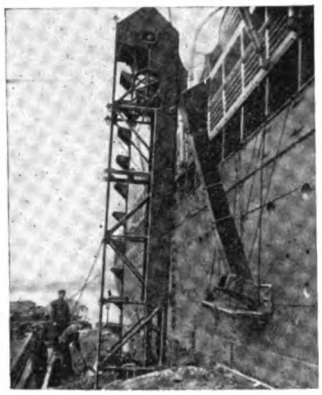

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Wood Water Tanks

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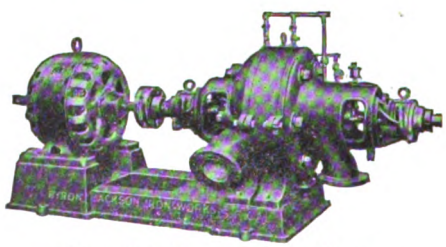
Jackson Turbine Pumps



Class F-2 Stage Turbine Pump.
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Are high efficiency pumps designed to operate continuously under various conditions.

These pumps are made to order to suit the different conditions of head, capacity and motor speed.

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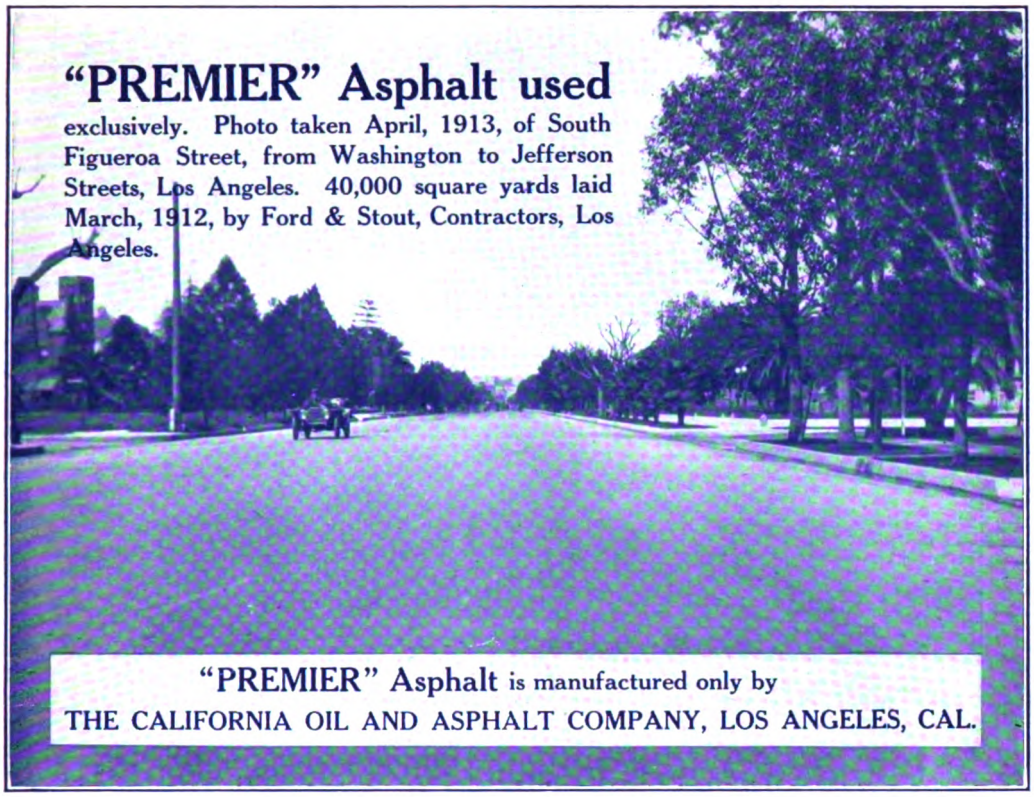

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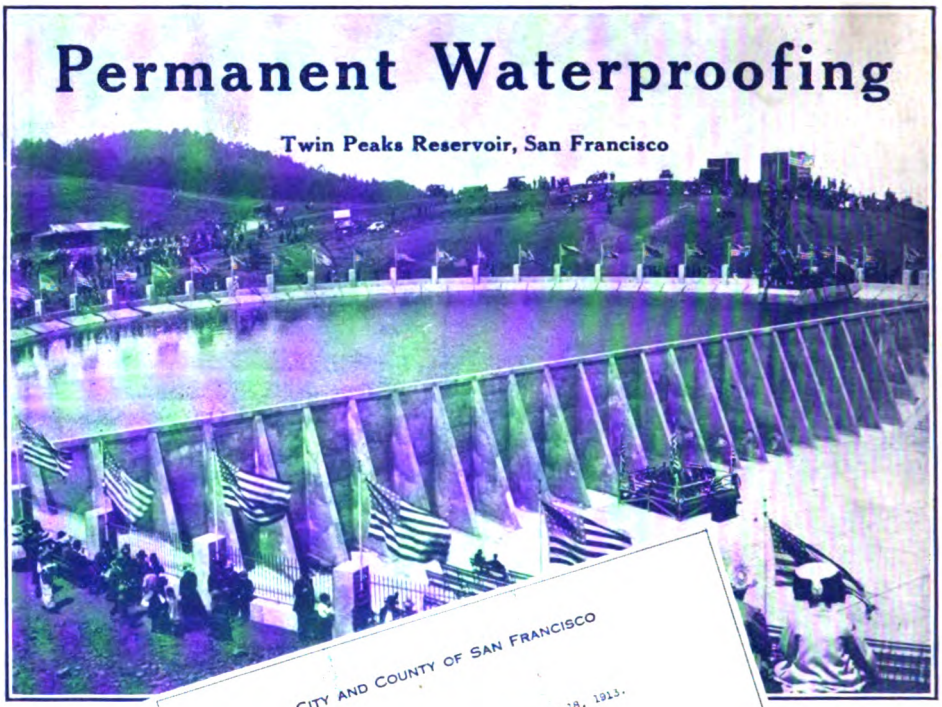

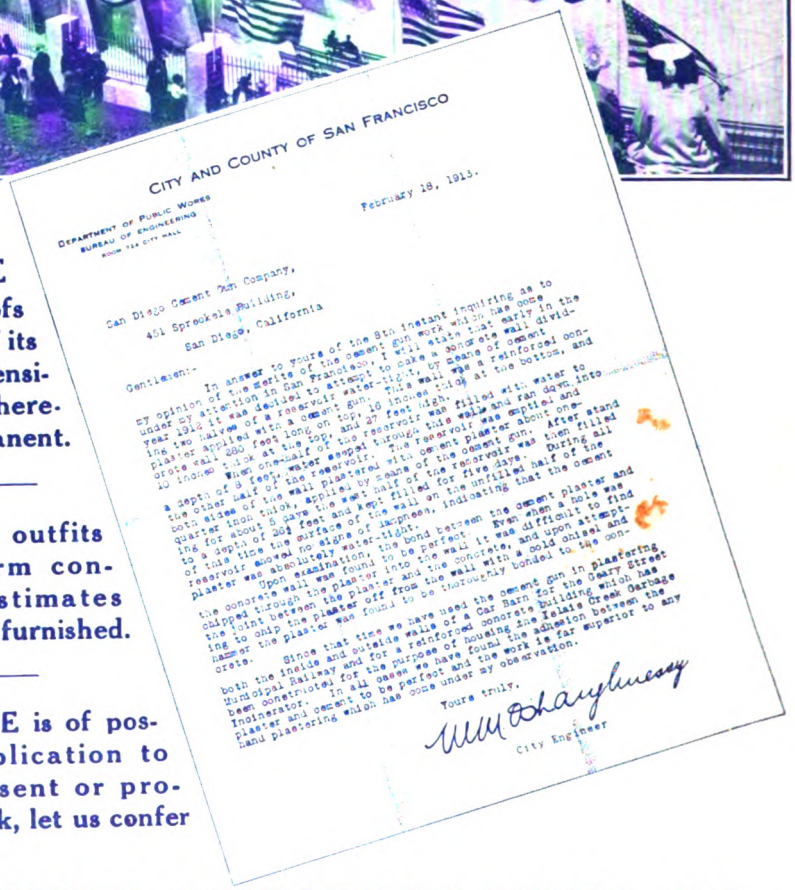

CITY AND COUNTY OF SAN FRANCISCO

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ROOM 724 CITY HALL

February 18, 1913.

San Diego Cement Gun Company,
451 Spreckels Building,
San Diego, California

Gentlemen:-

In answer to yours of the 8th instant inquiring as to my opinion of the merits of the cement gun work which has come under my attention in San Francisco, I will state that early in the year 1912 it was decided to attempt to make a concrete wall divided into two halves of a cement gun, 16 inches high, at the top, and 27 feet long on top, and 27 feet high. Plaster applied with a cement gun, by means of cement plaster wall 280 feet long on top, and 27 feet high. This wall was a reinforced concrete wall 16 inches thick at the top of the reservoir and 27 inches thick at the bottom, and to inches thick at the top of the reservoir. The reservoir was about one-half of the reservoir, water except through this wall was empty and a depth of 8 feet, applied by means of the cement gun. After stand the other half of the wall plastered with cement plaster and then filled quarter inch thick, applied by means of the reservoir was filled with water to both sides of the wall, and ran down into for about 5 days. During all to a depth of 20 feet and kept filled on the unfilled half of the cement of time the surface of the wall, indicating that the cement reservoir showed no signs of leakage. Upon examination, the plaster was found to be perfect. Even when a hole was chipped through the plaster and the concrete, and upon chisel and the joint between the plaster off from the wall it was difficult to hammer the plaster was found to be thoroughly bonded to the concrete.

Since that time we have used the cement gun in plastering both the inside and outside walls of a Car Barn for the Geary Street Municipal Railway and for a reinforced concrete building which has been constructed for the purpose of housing the Melaia Creek Garbage Incinerator. In all cases we have found the adhesion between the plaster and cement to be perfect and the work is far superior to any hand plastering which has come under my observation.

Yours truly,

W.M. O'Shaughnessy
City Engineer

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WESTERN ENGINEERING

Vol. 3, No. 6 SAN FRANCISCO, DECEMBER, 1913 $3 per year 25c per copy

LEADING ARTICLES

Investigation of Surge Phenomena by Means of Model Experiments

By W. F. Durand

A new method and its application whereby surge phenomena may be predetermined for each specific case.

Reclamation Work of the Netherlands Farms Company, Yolo Basin, California

By Fred H. Tibbetts

Description of methods by which 25,000 acres of hitherto waste land is being reclaimed and converted into fruitful soil.

Petroleum Resources, Bondoc Peninsula, Tayabas Province, Philippine Islands

A summary of the results of reconnaissance work undertaken by the Philippine Bureau of Science to determine the presence of petroleum.

Creating a Municipality

By George Nelson

How a new city was made to grow from the sand hills of southern California.

The New Big Bear Valley Dam

By John S. Eastwood

Description of a striking example of the application of the two strongest structures in the world, the pyramid and the arch, to dam construction.

Structural Geology South of the Santa Susana District

By Clarence A. Waring

Discussion of the geologic structure and its possibilities as an oil producer.

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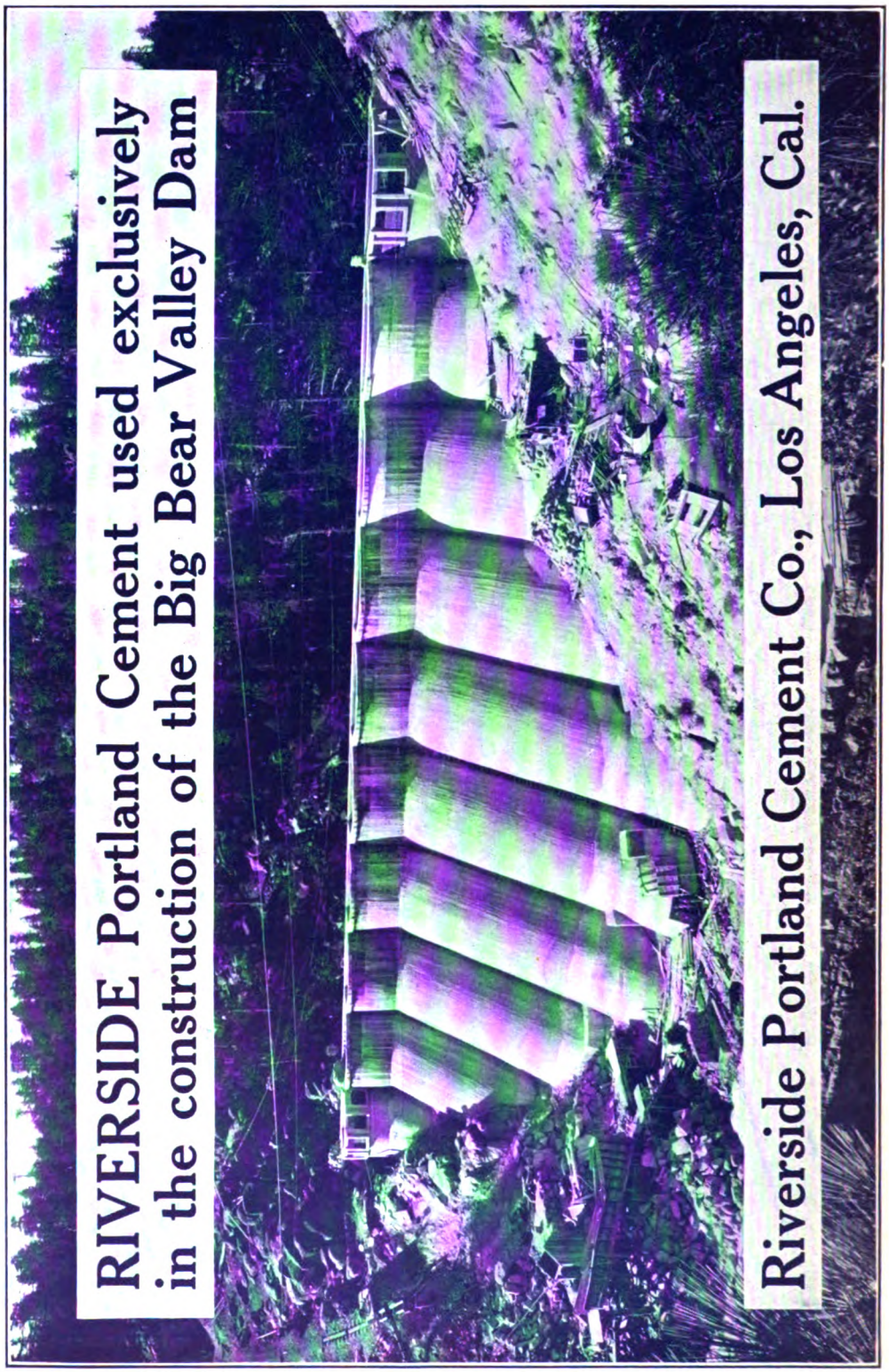

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When You Buy a Deep Well Turbine Pump Investigate the Guide Bearings

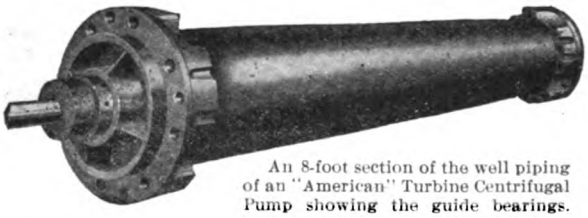
It's a feature you are likely to overlook, but a mighty important one in determining the reliability of the pump. To the improved design of guide bearings is due in large measure the success of the

"American" Turbine Centrifugal Pump

In this pump an inner casing separates the main shaft from the water passage.

At every eight-foot distance in the piping is a guide coupling.

This coupling is centered in the outer casing by a spider, held in position by being made the exact size to fit a machined recess in the cast joints of the piping.



An 8-foot section of the well piping of an "American" Turbine Centrifugal Pump showing the guide bearings.

Guide bearings of an "American" Turbine Centrifugal Pump, showing the several parts.

Through the center of each spider extends a babbitted bearing so designed that it forms an oil trap on the upper side.

Lubrication is done from the surface. When oil flows down the inner tube it must fill the oil trap to lubricate the guide bearing at that point before it reaches an orifice through which to flow to the next lower bearing.

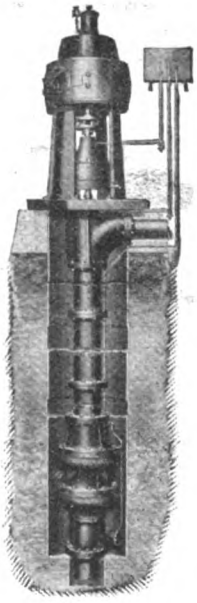
Below the lowest guide bearing is an orifice leading into the well so that any refuse matter in the inner casing passes out of the pump into the well without destroying the bearings.

These improved guide bearings maintain a perfectly aligned shaft and prevent the shaft "whipping", which is frequent cause of wrecking the pump on high speed long shafts where not provided with these bearings.

For waterworks installations this pump is made with hydraulically lubricated wood guide bearings.

And this is just one of the features that are building up a reputation for the American Deep Well Turbine Centrifugal Pump.

Catalog 132 shows about 50 Styles of American Centrifugals. Write for it.



The American Well Works

General Office and Works: Aurora, Ill.
Chicago Office: First Nat'l Bank Bldg.

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32" CONCRETE PIPE
Cement Pipe Yard of Arthur S. Bent, Elsinore, Cal.

Santa Cruz Portland Cement used in this work.

Santa Cruz Portland Cement Co.

GENERAL OFFICES: Crocker Building, SAN FRANCISCO, CAL.

Telephone Douglass 800. Factory: Davenport, Cal.

SANTA CRUZ PORTLAND CEMENT COMPANY
OFFICE CROCKER B'D'G SAN FRANCISCO
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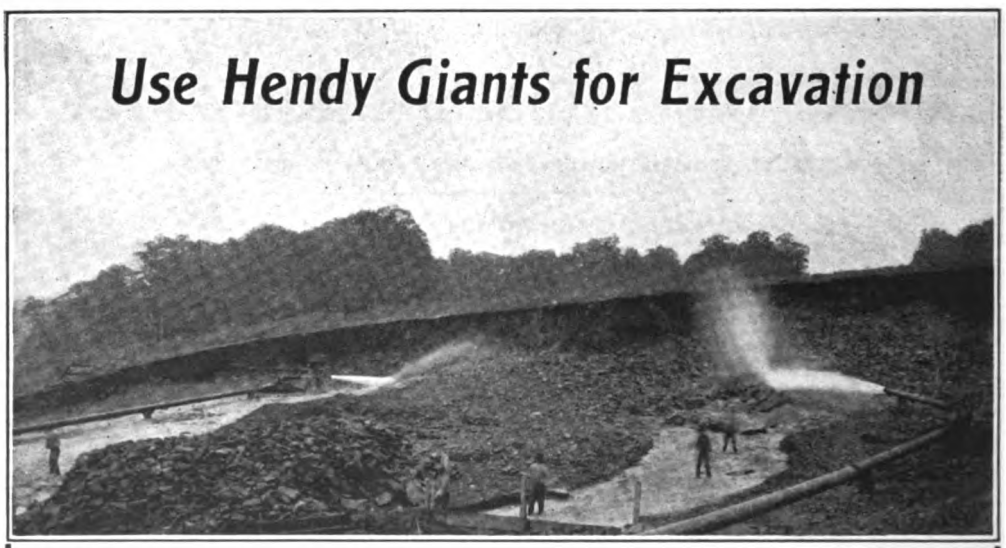
Use Hendy Giants for Excavation



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Send us a description of your problem. Our experience and advice is at your disposal.

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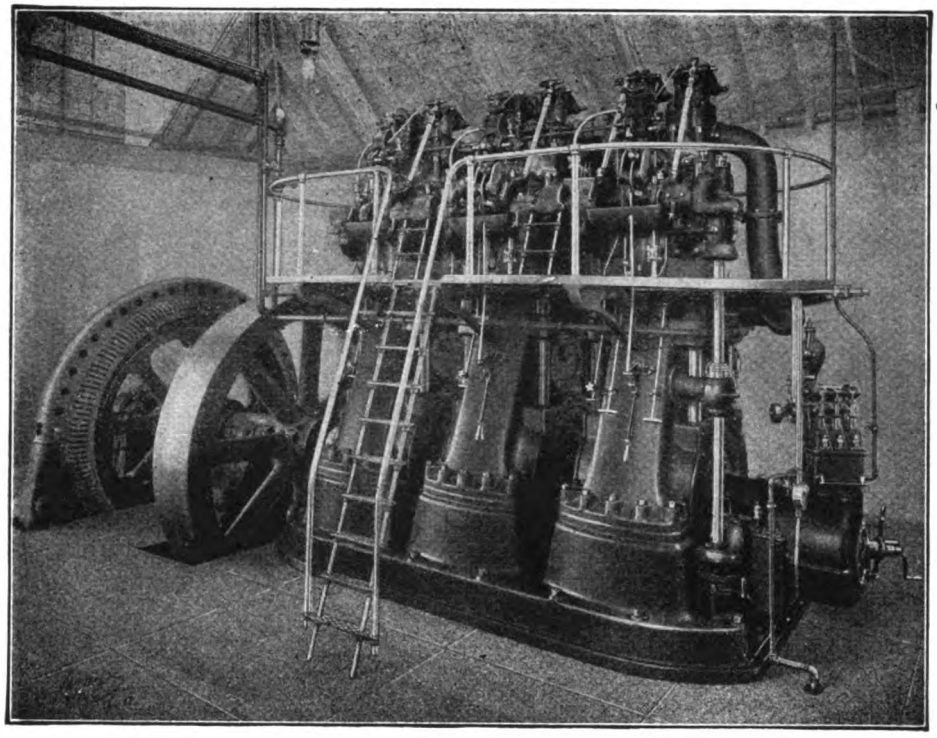

450 B. H. P. Atlas Oil Engine, Direct-Connected to 375 K. V. A. 60-Cycle Alternator.

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Vertical, Four-Cycle—300 to 1,000 B. H. P. Units

The Diesel cycle without modifications,—enclosed in a simple, massive structure,—designed for continuous service,—as durable and dependable as the best steam plant.

Suitable for the cheapest and heaviest fuel oils—either paraffin base from the Eastern fields, or asphaltum base from California and Mexico.

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Highest efficiency, close regulation and successful parallel operation positively guaranteed.

Sold on the merits demonstrated in actual service.

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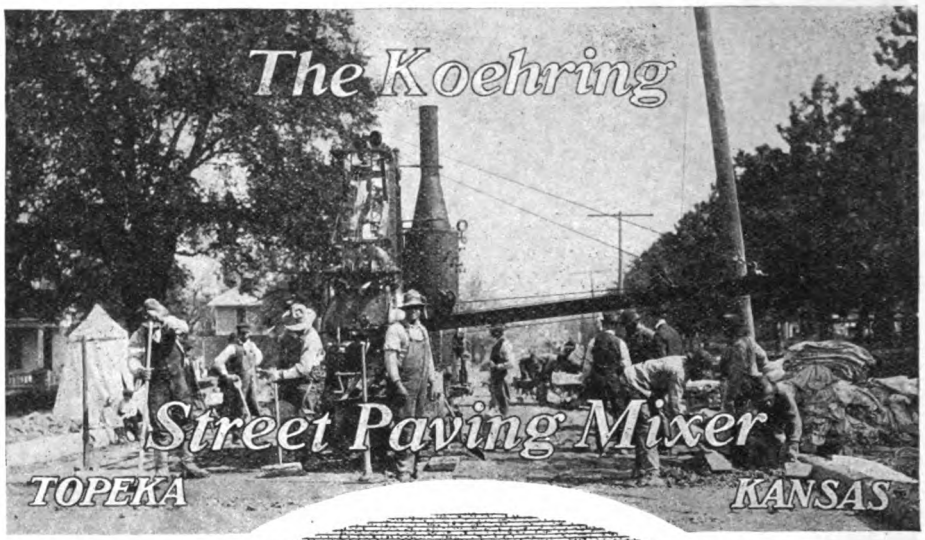


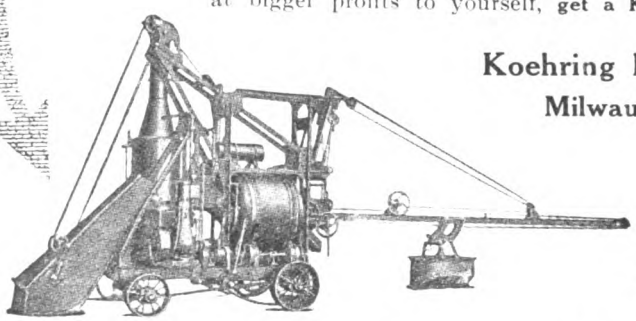
YOU

can easily do more work in less time at bigger profits

because with the Koehring Special Street Paving Mixer **one** man thoroughly **mixes, delivers** to a distance of 20 or 30 feet and **spreads** the full contents of the drum **in one minute's time** without leaving the machine. The bucket immediately and automatically returns to the drum to repeat the operation, thereby producing an almost **continuous flow** of concrete from the machine to **any desired spot** of the work on **either side.**

If you want to win more contracts, and if you desire to more satisfactorily and speedily complete each job at bigger profits to yourself, **get a Koehring Paver.**

Koehring Machine Company
Milwaukee, Wisconsin



This is the **Koehring Street Paving Mixer** equipped with twenty-foot special concrete delivery boom and bucket — the pioneer and most satisfactory street mixer in the world — often imitated but never duplicated.

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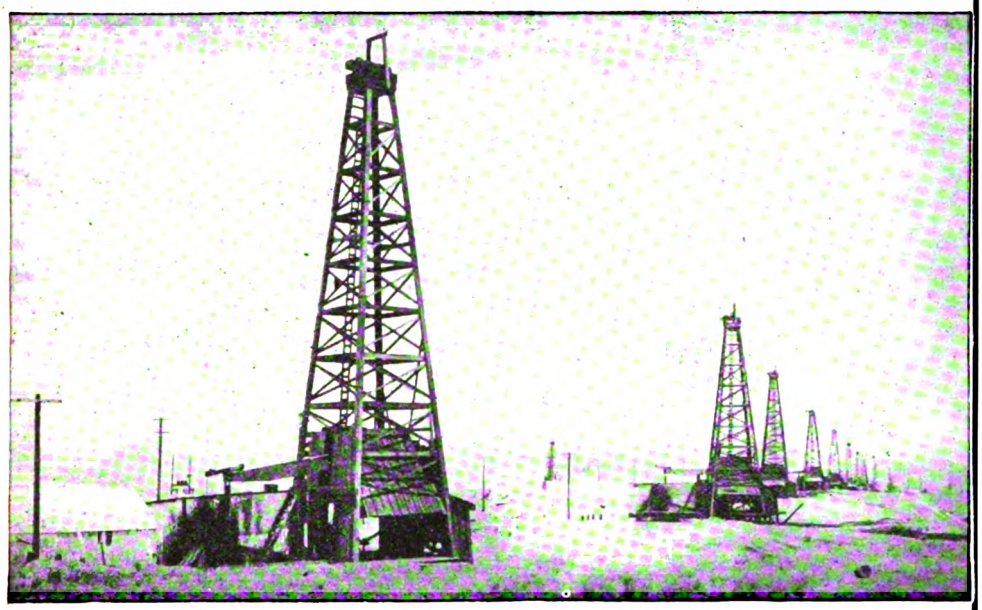

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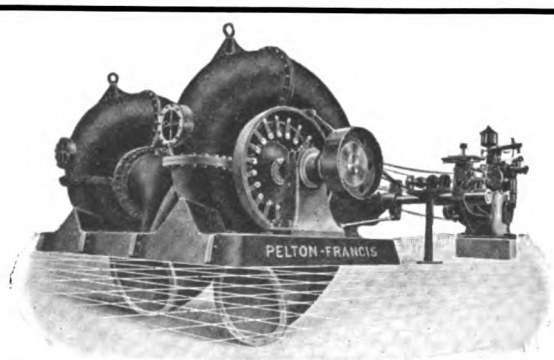

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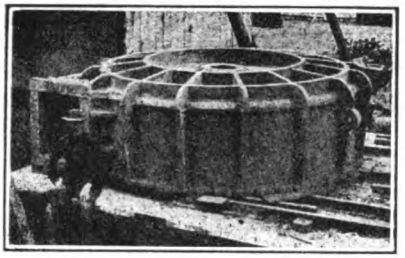

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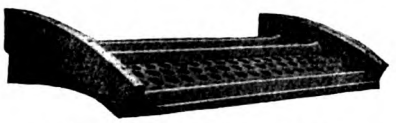

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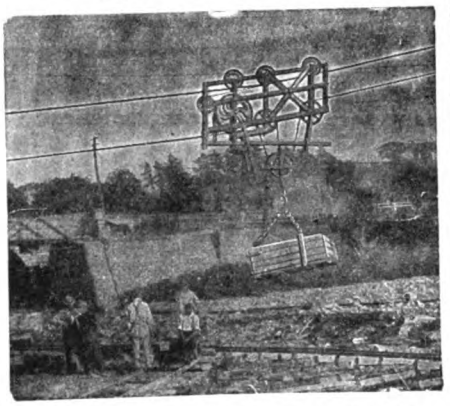

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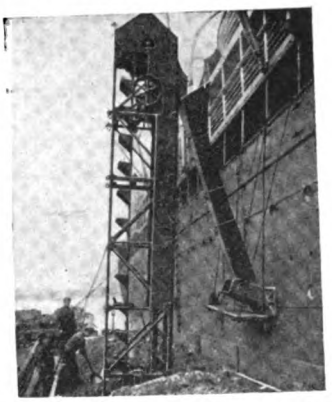

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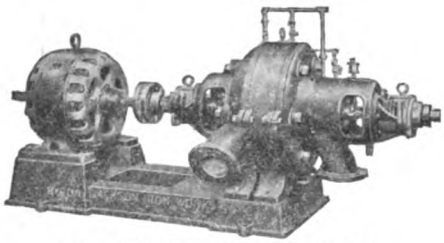

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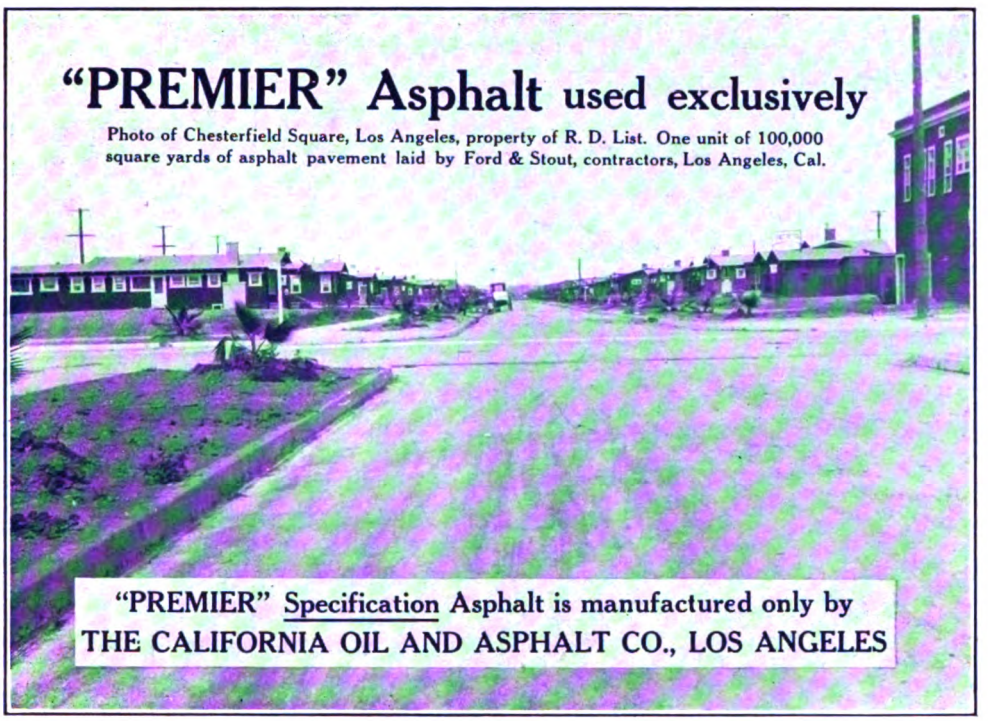

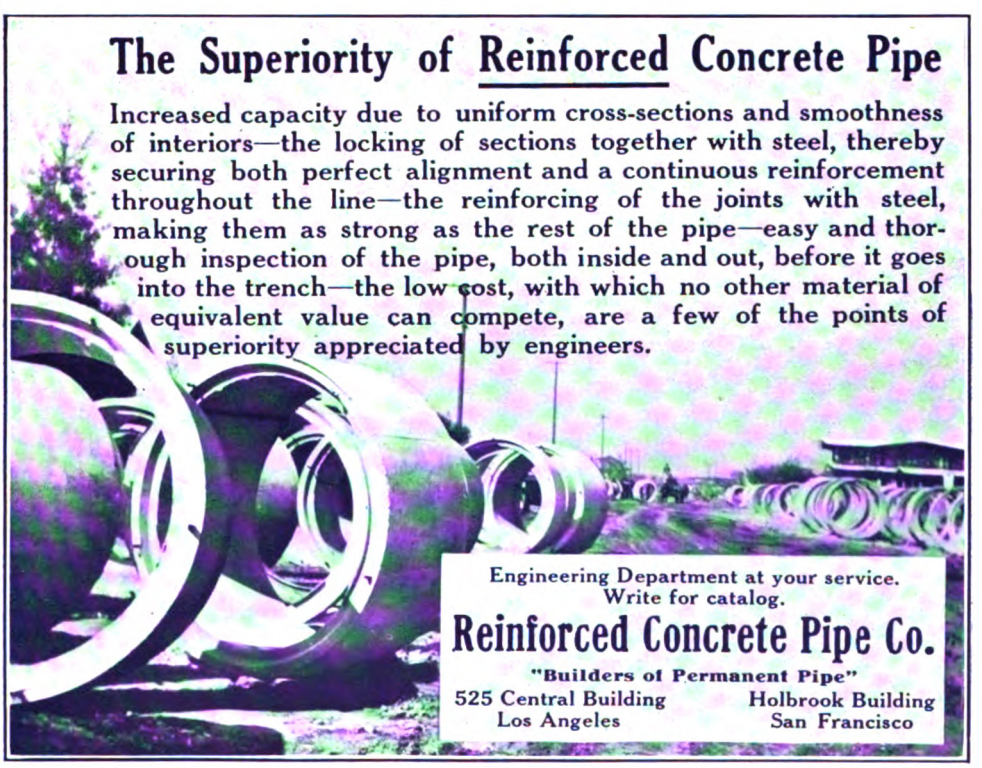

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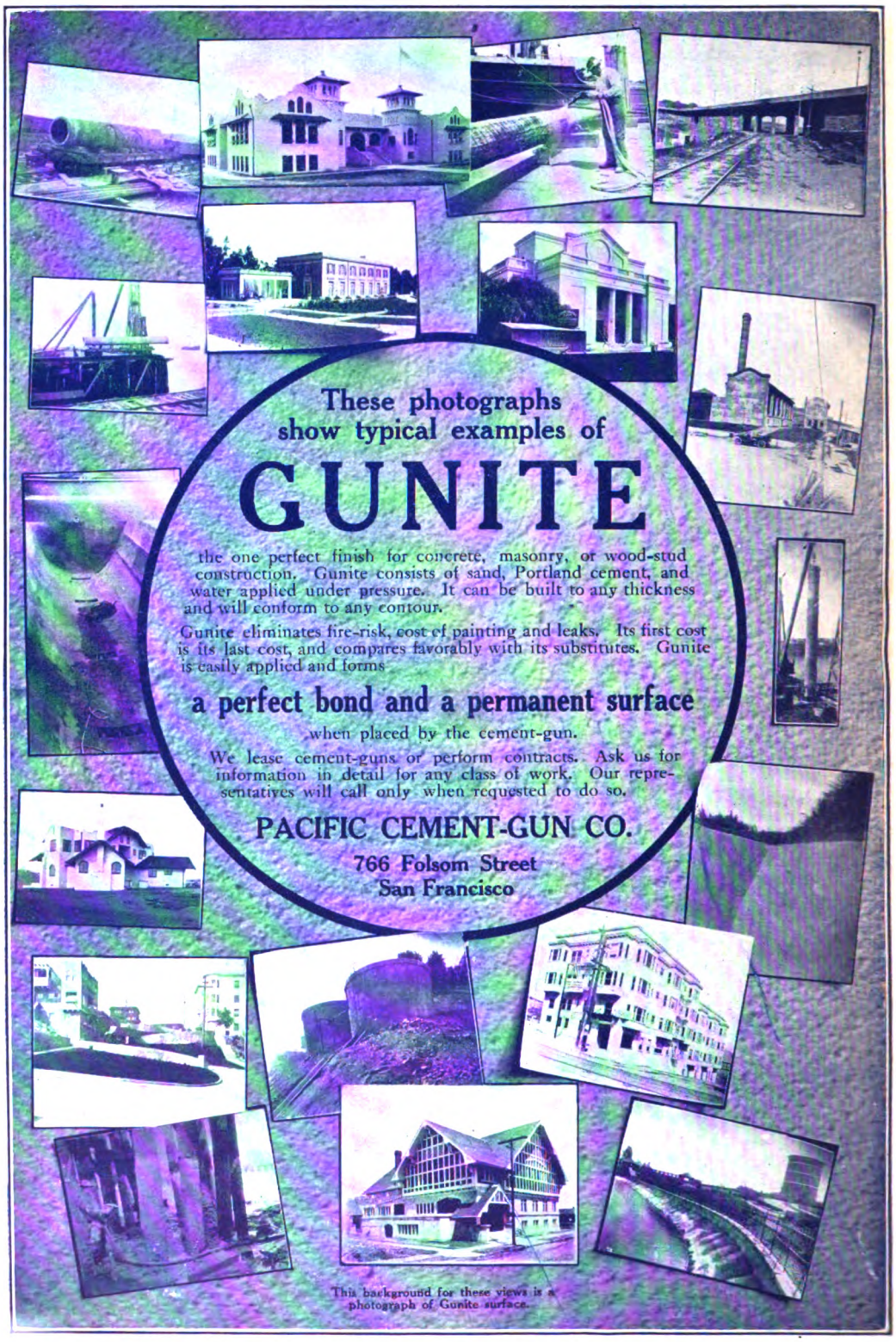

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